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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,102	11/20/2003	Liou Liang Horng	718673.2	1101

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BLACKWELL SANDERS PEPER MARTIN LLP
720 OLIVE STREET
SUITE 2400
ST. LOUIS, MO 63101

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/707,102	HORNG, LIOU LIANG	
	Examiner	Art Unit	
	Melissa S. Mercier	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-109* is/are pending in the application.

4a) Of the above claim(s) *7,24-46,71-100,103 and 107-109* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-22, 47-70, 101-102, 104-106* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 11/20/03, 8/1/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Receipt of Applicants elections of Group I and species E is acknowledged. Claims 1-109 are pending in this application. Claims 7, 24-46, 71-100, 103, 107-109 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected groups and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on December 7, 2006. Applicant's traversal is on the ground(s) that the Groups are closely releated and have a common utility, and therefore do not pose a search burden on the examiner. This is not found persuasive because in order to fully search all groups and species within the groups, the search would require separate searches of component combinations, methods and finished products.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 8-23, 55-58, 92, 97, and 104-106 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a

way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

M.P.E.P. § 2163 states, "An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention...one must define a compound by 'whatever characteristics sufficiently distinguish it'. A lack of adequate written description issue also arises if the knowledge and level of skill in the art would not permit one skilled in the art to immediately envisage the product claimed from the disclosed process."

While the specification describes a species of the instantly claimed chitosan derivatives at p. 12, paragraph 0036, it does not describe a sufficient number of species as to convey possession of the entire genus encompassed by derivatives. Applicant has provided adequate written description for chitosan neutralized with pyrrolidone carboxylic acid, carboxymethyl sodium salt of chitosan, chitosan neutralized with glutamic acid, and N,O-carboxymethyl chitosan,

Claims 11 and 56 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a hydrogel. The hydrogel, as described in the specification, can include active materials. Thus, the claims are drawn to a hydrogel

comprising an active agent with a curative or therapeutic value, which is defined only by biological activity.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of the complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present is that the material has a curative or therapeutic value. There is no description of structural characteristics are required to retain biological activity. Accordingly, in the absence of sufficient recitation of distinguishing characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath, Inc. v. Mahurkar, 19USPQ2d 111, clearly states, "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (See page 1117) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed *supra*, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of curative or therapeutic compounds, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation or synthesis. Adequate written description requires

more than a mere statement that it is part of the invention and reference to a potential method of isolating or synthesizing it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

Therefore, only the disclosed classes of active materials, but not the full breadth of the claims, meet the written description provision of 35 U.S.C. § 112, first paragraph. Applicant is reminded that *Vas-Cath* makes it clear that the written description provision of 35 U.S.C. § 112 is severable from its enablement provision (see *Vas-Cath* at page 1115). See also *In re Barker*, 559 F.2d 588, 591, 194 USPQ 470, 472 (CCPA 1977) (a specification may be sufficient to enable one skilled in the art to make and use the invention, but still fail to comply with the written description requirement).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

Claims 1-6, 8-23, 55-58, 92, 97, 104-106, 108-109 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear to the examiner what the composition must comprise. The terminology using in lines 1-2 of claim 1 is "a mixture of two or more of." Components 2-3 recited in subsequent lines also use the terminology "mixtures thereof". The metes and bounds of the composition are thus unclear.

Further regarding Claim 23, it is unclear to the examiner what applicant is claiming with "Example 6" prior to the recitation of the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10-12, 14-20, 22, 47-52, 55-57, 59-65, 67-68, and 104-106 are rejected under 35 U.S.C. 102(b) as being anticipated by Fox et al. (US Patent 5,578,661).

Fox discloses "compositions of polymer mixtures which are relatively fluid for dispensing into a wound bed or cavity and which are capable of forming a gel therein. The gel is preferably a hydrogel which protects the wound and permits healing, does not interfere with new tissue growth or development, is capable of absorbing significant amounts of wound exudate, and has sufficient cohesive strength for subsequent removal from the cavity or bed as an integral plug without interrupting the healing process (abstract).

Fox discloses, "the gel forming system comprising an aqueous mixture of a first component of at least one water-soluble polymer in an amount sufficient to increase the initial viscosity of the mixture and impart adhesivity properties thereto; a second component an acid-containing polymer; a third component of a polysaccharide or amino-containing polymer; and water. This system has a pH in the range of between

about 5.5 and 8.5 and the second and third components are each present in sufficient amounts which, in combination, increase the cohesiveness of the mixture over time, such that the mixture can be initially combined in a relatively fluid state and subsequently forms a cohesive gel structure" (column1, line 64 through column 2, line 9).

Additionally, "the first component is preferably a hydrophilic water-soluble polymer of polyethylene oxide, polyvinylpyrrolidone or mixtures thereof and is present in an amount of between about 3 and 35% by weight of the system" (column 2, lines 10-14).

Also, "the second component is preferably a polymer of an acid or acid forming compound or a copolymer of an acid or acid forming compound and a monomer which forms a water soluble compound, such as is poly(vinyl pyrrolidone/acrylic acid), poly(methyl vinyl ether/maleic anhydride), poly(ethylene/maleic anhydride) or poly(acrylic acid)" (column 2, lines 21-32).

Further "The third component is present in an amount of between about 0.5 and 5% by weight of the system and preferably comprises a compound which contains free or substituted amino groups for accepting protons from the second component and increasing the cohesiveness of the mixture. The most preferred third components are chitosan derivatives such as O-carboxymethyl chitosan, N-carboxymethyl chitosan, or N,O-carboxymethyl chitosan" (column 2, lines 41-58).

The gel forming system may comprise additional additives including preservatives, stabilizers, pigments, bactericides, antibiotics, cosmetics, moisturizers,

pharmacological agents, and mixtures thereof (column 2, lines 62-67). The gel system may also include humectants, such as glycerol, propylene glycol, and polyethylene glycol (column 3, lines 4-10). Additionally, conductive materials including water-soluble electrolytes such as inorganic or organic salts, such as potassium salt, a sodium salt, a magnesium salt, a calcium salt, or mixtures thereof can be added (column 3, lines 12-20). Potassium chloride, sodium chloride, and magnesium acetate are discloses as preferred electrolytic substances (column 6, lines 23-25).

Claims 1-6, 11-12, and 47-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Zentner et al. (US Patent 6,730,327).

Zentner discloses a "polymer blend is prepared by dissolving chitosan and a second polymer in an acidic aqueous solution to form an aqueous polymer blend, dehydrating said aqueous polymer blend, and recovering said polymer blend. The second polymer may be polyvinylpyrrolidone, which swells in an acidic environment and de-swell in a more neutral or basic environment. Since the various polymer blends are not covalently or ionically cross-linked, but are physically combined, each polymer in the physical blend maintains its original chemical structure (abstract).

"The polymer blend may be blended with the bioactive agent or drug as a powder, or the polymer blend may be hydrated in a solution containing bioactive agent or drug" (column 8, lines 15-17). Such agents and drugs include "organic or inorganic compounds or substances, nutrients or biologically beneficial agents including proteins, peptides (including polypeptides and oligopeptides), hormones, vaccines, viruses,

oligonucleotides, genes, nucleic acids, steroids, antibiotics, antibodies, live cells, and other chemotherapeutic or non-therapeutic agents (column 8, lines 37-44).

Claims 1-6, 11-12, 14-15, 20-22, 47-52, 59-60, and 65-67 are rejected under 35 U.S.C. 102(b) as being anticipated by Haak et al. (US Patent 5,203,768).

Haak discloses, "a device for delivering an agent transdermally or transmucosally" (abstract). The device comprises "hydrophilic polymers for use in the matrix of the reservoirs including polyvinylpyrrolidone, polyacrylamide, a starch-graft-poly(sodium acrylate-co-acrylamide) polymer, hydrogels including polyhydroxyethyl methacrylate, chitosan, along with blends thereof (column 10, lines 13-34).

The reservoirs also contain an active agent, which is iontophoretically delivered, such as sodium chloride, alkali metal salts, alkali earth metal salts, including chlorides, sulfates, nitrates, carbonates, phosphates, and organic salts including ascorbates, acetates, and mixtures thereof" (column 5, lines60-68).

Additionally, "in additon to the drug and electrolyte, the reservoirs may also contain other conventional materials such as dyes, pigments, inert fillers and other excipents" (column 10, lines 40-43).

Haak discloses active substances and drugs as any therapeutically active substance, which is delivered to a living organism to produce a desired, usually beneficial effect. These include anti-infectives, antibiotics, antivirals, analgesics, peptides, proteins, polypeptides and macromolecules (column 12, line 46 through column 13, line 47).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 13, 23, 58, 69-70, and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. (US Patent 5,578,661).

Fox's teaching are described above and applied in the same manner.

Fox does not explicitly teach the active materials claimed in the instant claims.

Fox also does the exact weight ratios of components for the hydrogel.

Fox does disclose however, " a wide variety of medicaments can be included in the gel. Specifically preferred medicaments or pharmacologic agents include EGF, PDGF or TGF-1, since these promote wound healing. Other such agents which are within the level of one skilled in the art can be included for their known advantages or to achieve their particular effects" (column 6, lines 43-49).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have expanded upon the teachings of Fox's medicaments to include others with known advantages to achieve a particular effect.

Additionally, the instant claims differ from the references only in the specific percentage selected for the compositions. However, It would have been deemed prima Facie obvious to one having ordinary skill in the art at the time of the invention to optimize the percentage of film forming polymers, moisturizers, active ingredients, and water, to prepare a hydrogel composition for the topical treatment of dermatological conditions because the determination of a specific percentage having the optimum therapeutic effect is well within the level of one having ordinary skill in the art, and the artisan would be motivated to determine optimum amounts to get the maximum effect of the active compounds. Therefore, the invention as Whole has been prima face obvious to one of ordinary skill in the art at the time the invention was made.

Applicant is reminded that where the general conditions of the claims are met, burden is shitted to applicant to provide a patentable distinction. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. See In re Aller, 220 F.2d 454 105 USPQ 233,235 (CCPA 1955).

Claims 8-9 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. (US Patent 5,578,661) in view of Partain, III et al. (US Patent 4,946,870).

Fox's teaching are described above and applied in the same manner.

Fox does not disclose the use of chitosan salts.

Partain discloses delivery systems providing biocompatible, substantive, gas permeable, films from which actives are available to a designated site (abstract). The delivery systems comprise at least one amino polysaccharide selected from chitosonium polymers and covalent chitosan derivatives (column 2, lines 35-50).

Partain discloses "examples of the chitosonium derivatives include those wherein one or more of the amino groups have been neutralized by acids, which may include: pyrrolidone carboxylic acetic, nicotinic, glutamic, aspartic, and the acid form of other amino acids such as N-acetyl methionine, N-acetyl tyrosine, N-acetyl glycine, N-benzoyl serine" (column 4, lines 6-15).

It would have been obvious to a person of ordinary skill in the art to substitute one chitosan derivative with film forming properties for another chitosan derivative with film forming properties in order to obtain a delivery system which is "non-iratating, imperceptible, substantive, gas permeable, film from which actives are available for treatment of the subject at the site" (column 2, lines 45-47). Additionally, a person of ordinary skill in the art would have been motivated to combine the teaching of Fox and Partain in order to "provide delivery systems which avoid many of the undesirable features of ointments and salves and yet maintain and transmit the necessary amount of active ingredient to an appropriate part of the body" (column 2, lines 18-22). It is generally considered to be prime facie obvious to combine compounds each of which is taught by the prior art to be useful for the same purpose in order to form a composition that is to be used for an identical purpose. The motivation for combining them flows from their having been used individually in the prior art, and from them being recognized

in the prior art as useful for the same purpose. As shown by the recited teachings, instant claims are no more than the combination of conventional components of chitosan derivatives with the similar properties. It therefore follows that the instant claims define prime facie obvious subject matter. Cf. In re Kerhoven, 626 F.2d 848, 205 USPQ 1069 (CCPA 1980).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa S. Mercier whose telephone number is (571) 272-9039. The examiner can normally be reached on 7:30am-4pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSMercier

Gollamudi S. Kishore, PhD
Primary Examiner
Group 1500